

Pigeon Guillemot Breeding Colony Status for the Inland Marine Waters of Washington State, as Captured by PSAMP Efforts, 1999–2000

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Abstract

The pigeon guillemot, common throughout the inland marine waters of Washington, is an ideal diving marine bird species for monitoring the health of Puget Sound's near-shore waters during summer. Washington Department of Fish and Wildlife and U. S. Fish and Wildlife Service conducted censuses of guillemot colonies May 1999 through 2000 and June 1999. Counts, limited to approximately the first three hours after sunrise of any given day, were made from boats at the 121 colonies listed in the Catalog of Washington Seabird Colonies (Speich and Wahl 1989); the remaining marine inland waters were searched for colonies not listed in the colony catalog, providing complete coverage of the region. All colonies were counted regardless of colony size, with replicates on at least 2-3 different days. The maximum total count of breeding guillemots during May 1999 was 9,172 (from 273 colonies), and in May 2000 the maximum total count was 14,852 (from 429 colonies). The maximum count of guillemots, at the 269 colonies counted during both years, was 9,121 and 10,380, from 1999 and 2000 respectively. A total of 308 colonies, not previously recorded in the Catalog of Washington Seabird Colonies (Speich and Wahl 1989), were documented, adding over 89% to the total number of breeding guillemots known. The importance of counting smaller colonies was apparent; 62% of the colonies, in 2000, had ≤ 25 birds, comprising 16% of all birds counted. By continuing this survey that combines standardized timing, methodology, replicates, and geographic coverage within each season, pigeon guillemot population trends will be better understood.

Objectives

The primary objective of this project was to develop, and implement, a study to assess the status and population trends of the pigeon guillemot in Washington's inland marine waters. Scientists with Washington Department of Fish and Wildlife (Fish and Wildlife) have been monitoring the pigeon guillemot in Puget Sound during the PSAMP summer aerial surveys (Fish and Wildlife monitoring and assessment of marine bird population indices) from 1992-99. When comparing the densities from the PSAMP surveys with the MESA aerial surveys of 1978-79 (NOAA / EPA two-year assessment of marine bird distribution and abundance of the northern Puget Sound), a clear trend has been difficult to assess due to high confidence limits. The high C.L. reflects the ineffectiveness of the aerial survey method for monitoring guillemots. To obtain a clearer picture of pigeon guillemot population trends in Puget Sound, a 1999 - 2000 breeding colony census was conducted. The census was coordinated by PSAMP program staff in Olympia, of both the Washington Department of Fish and Wildlife, and U. S. Fish and Wildlife Service (USFWS). The participants that conducted the surveys included the Olympia PSAMP staff of both WDFW and USFWS, staff from the U. S. National Wildlife Refuges, the Whale Museum, and regional staff and volunteers of Washington Department of Fish and Wildlife.

Methods

Counts were conducted by vessel from sunrise to 3.25 hours after sunrise, at sea states of \leq Beaufort 3. All guillemot colonies listed in the Washington Catalog of Seabird Colonies were counted. During 1999 counts occurred during May and June, with special emphasis to search for, and count, colonies not listed in the Colony Catalog; a minimum of one count was conducted in May at the colonies listed in the Colony Catalog. However, efforts were made to get three counts per colony. During 2000 areas not searched in

1999, for unlisted colonies, were investigated in April. All colony counts were conducted during May only, with an average of 3 counts at each colony.

Results

Counts were conducted at 273 colonies (maximum count of 9,172 guillemots) in May 1999 (Figure 1), with colonies previously listed (Speich and Wahl 1989), comprising 120 of these (6,740 guillemots counted). Figure 2 shows the 429 colonies counted during May 2000 (14,852 guillemots counted), with colonies previously listed comprising 121 colonies (7,840 guillemots counted) (Table 1). The maximum count of guillemots, at the 269 colonies counted during both years was 9,121 and 10,380, from 1999 and 2000 respectively. A total of 308 colonies, not previously recorded in the Catalog of Washington Seabird Colonies (Speich and Wahl 1989), were documented, adding over 89% to the total number of breeding guillemots known. The importance of counting smaller colonies was apparent; 62% of the colonies, in 2000, had ≤ 25 birds, comprising 16% of all birds counted.

[Editor's note: Figures 1 and 2 appear at the end of this paper.]

Table 1. Summary of May 1999 and 2000 pigeon guillemot counts in the inland marine waters of Washington State. Counts are grouped by whether or not colonies were previously listed in the Catalog of Washington Seabird Colonies.

Listing in Catalog of Washington Seabird Colonies								
	Listed in Colony Catalog			Not Listed in Colony Catalog			All Colonies	
Year	# of Colonies	# of PIGU	% of PIGU	# of Colonies	# of PIGU	% of PIGU	# of Colonies	# of PIGU
1999	120	6,740	73%	153	2,432	27%	273	9,172
2000	121	7,840	53%	308	7,012	47%	429	14,852

Conclusions

It is important to count all colonies during each survey year:

- Without a thorough census of all colonies, any movement between colonies would be missed.
- Those colonies supporting fewer than 25 birds comprised 16% of all birds counted

All colonies should be counted at least three times due to daily variation in counts from environmental and disturbance factors.

Counts should be continued for at least five years to begin to picture population trends. The increase of 13.8% observed from 1999 to 2000 demonstrates this.

At this time we do not place much significance on the increase of guillemots counted between 1999 and 2000 for the following reasons:

- Only 269 of 435 colonies were counted in May of both years.
- Two years of data is not sufficient to accurately document population trends.

To better understand and assess pigeon guillemot trends in the future, it is best to continue this protocol that combines:

- A standardized timing.
- A standardized methodology.
- Multiple replicates.
- And complete geographic coverage within each year.

This survey design is the most reliable in tracking population trends in guillemots, as nearly all breeding birds are counted, while avoiding the high confidence limits found while using the aerial survey method. Future colony censuses could then be compared over time.

Acknowledgments

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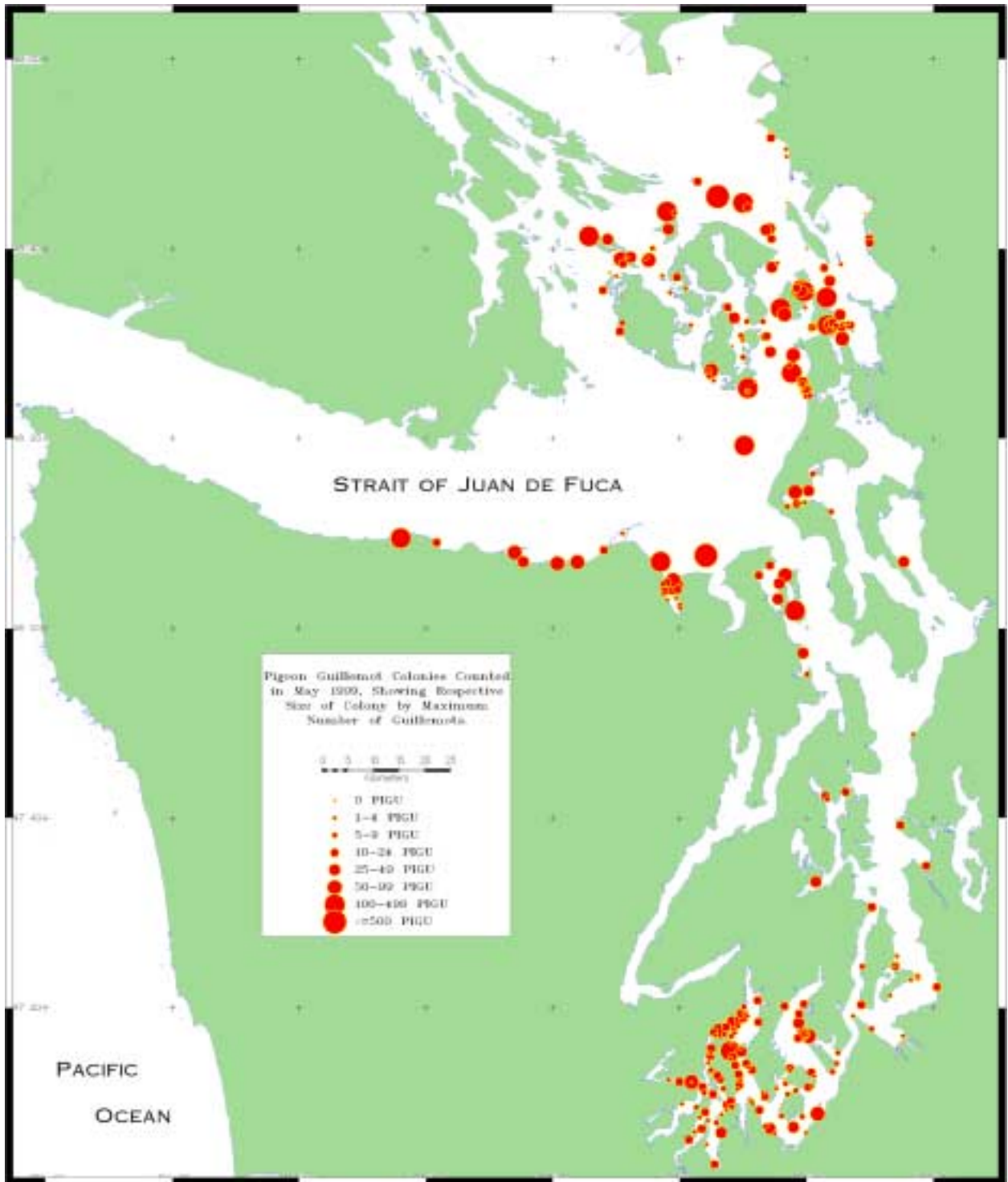


Figure 1. Pigeon guillemot colonies counted during May 1999. Size of dots represent each colony's respective size in maximum number of birds counted.

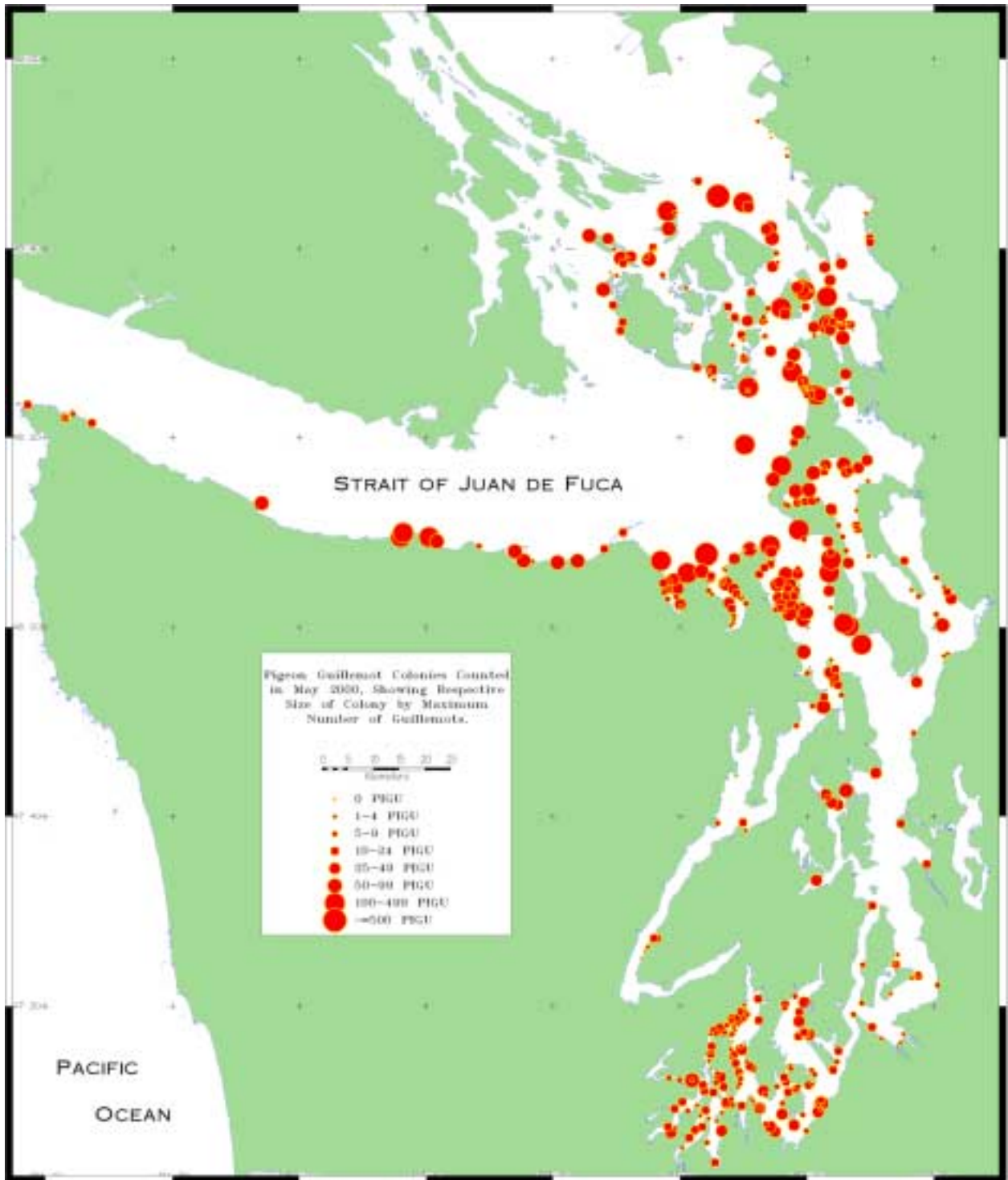


Figure 2. Pigeon guillemot colonies counted during May 2000. Size of dots represent each colony's respective size in maximum number of birds counted.